



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,962	03/31/2004	Seiichiro Sasaki	OKI 417	4886

7590  
RABIN & BERDO, P.C.  
Suite 500  
1101 14th Street  
Washington, DC 20005

03/22/2007

EXAMINER
----------

SEMENENKO, YURIY

ART UNIT	PAPER NUMBER
----------	--------------

2841

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/812,962

Applicant(s)

SASAKI ET AL.

Examiner

Yuriy Semenenko

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 16-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 16, 17 and 21-25 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 18-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) *        | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/18/2007 has been entered.

### ***Response to Amendment***

2. Amendment filed on 01/18/2007 has been entered. In response to the Office Action dated 11/20/ 2006, Applicants have amended claims 1, 5, 21, 22 and 23. Claims 24-25 are newly added. Claims 1-7 and 16-25 are now pending in the application.

### ***Specification***

3. The Specification amendments, filed on 01/18/2007 are considered and is acknowledged. The Specification amendments are approved.

### ***Claims***

4. Claims 1, 5 and 21-23 amendments, filed on 01/18/2007 are considered and acknowledged. The claims amendments are approved.

### ***Response to Arguments***

5. Applicant's arguments filed 01/18/2007 have been considered and acknowledged but are moot in view of the new ground(s) of rejection.

### ***Drawings***

6. Figures 9 and 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

7. Claims 2 and 25 are objected to because of the following informalities:  
Claim 2, line 2: It should be better -equal in potential- instead of "identical in potential".  
Claim 25, line 13: "first conductive material" should be change to "a first conductive material", for proper antecedent basis.  
Claim 25, line 17: "second conductive material" should be change to "a second conductive material", for proper antecedent basis.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2841

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.1. Claims 1, 17, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Titizian et al. (Patent #6331931) hereinafter Titizian.

As to claim 1: Titizian discloses in Fig. 9 a multilayered power supply line 900 (column 12, lines 5-6) having a metal-insulator-metal structure (column 14, line 29-30), and comprising: a first metal strip 904 to serve as a wiring metal; a second metal strip 906 located below the first metal strip; and a third metal strip 902 to serve as a capacitor metal (intended use), said third metal strip 902 being sandwiched between the first metal strip 904 and the second metal strip 906; and an insulator 908 and 910 (column 12, line 2) embedded into gap portions defined among the first metal strip, the second metal strip, and the third metal strip; wherein the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel; wherein the second metal strip is electrically connected to the first metal strip and thereby supplied with power equal in potential to the first metal strip (column 11, line 67 and column 12, line 1, considering ground as power potential equal to ground potential), and wherein the first metal strip and the second metal strip are equal in wiring width (see Fig. 9).

As to claim 21: Titizian discloses in Fig. 9 a multilayered power supply line 900 (column 12, lines 5-6) having a metal-insulator-metal structure (column 14, line 29-30), and consisting of: a first metal strip 904 to serve as a wiring metal; a second metal strip 906 located below the first metal strip; a third metal strip 902 to serve as a capacitor metal (intended use), said third metal strip 902 being sandwiched between the first metal strip 904 and the second metal strip 906; an insulator 908 and 910 (column 12, line 2) embedded into gap portions defined among the first metal strip, the second metal strip, and the third metal strip; and electrical connections between the first and third metal

Art Unit: 2841

strips (as plates of the capacitor connected in electrical circuit, Fig. 5B) and between the first and second metal strips (column 11, line 67 and column 12, line 1); wherein the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel (see Fig. 9).

As to claim 22: Titizian discloses in Fig. 9 the multilayered power supply line 900 according to claim 21, wherein the first metal strip 904 and the second metal strip 906 are equal in wiring width, Fig. 9.

As to claim 17: Titizian discloses in Fig. 9 the multilayered power supply line 900 according to claim 1, wherein the third metal strip 902 is narrower than the wiring width of the first metal strip 904 and the second metal strip 906.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9.1. Claims 23 and 24 are rejected under 35 U.S.C. 102(b) as anticipated by Titizian or, in the alternative, under 35 U.S.C. 103(a) as obvious over Titizian in view of Admitted by Applicant Prior Art, hereinafter "APA".

As to claims 23 and 24: Titizian discloses in Fig. 9 the multilayered power supply line 900 according to claim 21 and at least one of a source potential connection of an external power supply and a ground potential connection connected at to at least one end of the multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line 600, Fig. 6B (column 11, lines 61-67 and column 12, lines 1-6).

or, in the alternative,

Titizian discloses in Fig. 9 the multilayered power supply line 900 according to claim 1(21),

except Titizian does not explicitly teach at least one of a source potential connection of an external power supply and a ground potential connection connected at least one end of the multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line.

APA discloses at least one of a source potential connection of an external power supply and a ground potential connection connected at least one end of the multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line (specification, page 2, lines 10-19).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention at least one of a source potential connection of an external power supply and a ground potential connection connected at least one end of the multilayered power supply line, whereby electricity is conductable lengthwise through the multilayered power supply line in order to provide voltage potential to semiconductor devices.

Art Unit: 2841

9.2. Claim 25 is rejected under 35U.S.C. 103(a) as being unpatentable over Titizian in view of Admitted by Applicant (Prior Art, hereinafter "APA") and in view of Sano (Patent #6876059) hereinafter Sano.

As to claim 25: Titizian discloses in Fig. 9 a multilayered power supply line 900 (column 12, line 5-6) having a metal-insulator-metal structure (column 14, line 29-30), and comprising: a first metal strip 904 that serves as a wiring metal; a second metal strip 906 located below the first metal strip; and a third metal strip 902 that serves as a capacitor metal (intended use), said third metal strip 902 being sandwiched in a gap between the first metal strip 904 and the second metal strip 906; wherein the first metal strip, the second metal strip, and the third metal strip are lengthwise mutually parallel, Fig. 9; wherein an insulator 908, 910 (column 12, line 2) is embedded into gap portions defined among the first metal strip, the second metal strip, and the third metal strip, wherein the second metal strip is electrically connected to the first metal strip (column 11, line 67 and column 12, line 1),

except Titizian does not explicitly teach two things:

1. the second metal strip is electrically connected to the first metal strip by first conductive material in at least one longer through hole; and the first conductive material being in direct contact with the first metal strip and the second metal strip; and
2. the first metal strip is electrically connected to the third metal strip by second conductive material in at least one shorter through hole that is shorter than the longer through hole, the second conductive material being in direct contact with the first metal strip and the third metal strip.

APA discloses in Fig. 10 the second metal strip 94 is electrically connected to the first metal strip 92 by first conductive material in at least one longer through hole 96, and the first conductive material being in direct contact with the first metal strip and the second metal strip.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention that the second metal strip is electrically connected to the first metal strip by first conductive material in at least one



Art Unit: 2841

longer through hole, and the first conductive material being in direct contact with the first metal strip and the second metal strip in order to reduce noise, as taught by APA (specification, page 2, lines 7-9).

Sano discloses in Fig. 1 layer 1 (the metal strip) comprising two metal electrodes 1a (power source potential) and 1b (ground source potential). As such, it can be considered that strip 1 has the power source potential and ground source potential simultaneously depends on what part of the strip 1 is discussed. In this structure the first metal strip can be electrically connected to the third metal strip. And further, the one metal strip 1, Fig. 1 is electrically connected to the another metal strip 6 by second conductive material in at least one shorter through hole 5 that is shorter than the longer through hole 2, the second conductive material being in direct contact with the one metal strip 1 and another metal strip 6.

And furthermore, it has been held In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that change in shape and change in size of the configuration of the claimed device was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention that the first metal strip is electrically connected to the third metal strip by second conductive material in at least one shorter through hole that is shorter than the longer through hole, the second conductive material being in direct contact with the first metal strip and the third metal strip in order to provide MIM structure capacitor connected between a power source and integrated circuit device, as taught by Sano (column 2, lines 32-35).

9.3. Claims 2-4 are rejected under 35U.S.C. 103(a) as being unpatentable over Titizian., as applied to claim 1 above, and further in view of Sano.

To apply prior art the Examiner consider "a layer" as "a strip" as applicant does.

As to claim 2: Titizian, as modified, discloses the multilayered power supply line according to claim 1, wherein the second metal strip and the first metal strip are identical in potential to each other and the second metal strip is electrically connected to the first metal strip and thereby supplied with the power identical in potential to the first metal strip.

except, Titizian doesn't explicitly teach the second metal strip and the third metal strip are identical in potential to each other and the third metal strip is electrically connected to the first metal strip and thereby supplied with the power identical in potential to the first metal strip.

Sano discloses in Fig. 1 layer 1 (the metal strip) comprising two metal electrodes 1a (power source potential) and 1b (ground source potential). As such, it can be consider that strip 1 has the power source potential and ground source potential simultaneously depends on what part of the strip 1 is discussed. In this structure the second metal strip and the third metal strip are identical in potential to each other and the third metal strip is electrically connected to the first metal strip and thereby supplied with the power identical in potential to the first metal strip.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention that the second metal strip and the third metal strip are identical in potential to each other and the third metal strip is electrically connected to the first metal strip and thereby supplied with the power identical in potential to the first metal strip to provide MIM structure capacitor connected between a power source and integrated circuit device, as taught by Sano (column 2, lines 32-35).

As to claim 3: Titizian, as modified, discloses the multilayered power supply line according to claim 2, wherein the first metal strip is supplied with a source potential of an external power supply,

except, Titizian doesn't explicitly the source potential of the external power supply is supplied even to the second metal and the third metal strip.

Art Unit: 2841

Sano discloses in Fig. 1 layer 1 (the metal strip) comprising two metal electrodes 1a (power source potential) and 1b (ground source potential). As such, it can be considered that strip 1 has the power source potential and ground source potential simultaneously depends on what part of the strip 1 is discussed. In this structure the source potential of the external power supply is supplied even to the second metal and the third metal strip.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention that the source potential of the external power supply is supplied even to the second metal and the third metal strip in order to provide MIM structure capacitor connected between a power source and integrated circuit device, as taught by Sano (column 2, lines 32-35).

As to claim 4: Titizian, as modified, discloses the multilayered power supply line according to claim 2, wherein the first metal strip is supplied with a ground potential, and the ground potential is supplied even to the second metal strip and the third metal strip.

except, Titizian doesn't explicitly the third metal strip is supplied with a ground potential.

Sano discloses in Fig. 1 layer 1 (the metal strip) comprising two metal electrodes 1a (power source potential) and 1b (ground source potential). As such, it can be considered that strip 1 has the power source potential and ground source potential simultaneously depends on what part of the strip 1 is discussed. In this structure the first metal strip is supplied with a ground potential, and the ground potential is supplied even to the second metal strip and the third metal strip.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention that the third metal strip is supplied with a ground potential in order to provide MIM structure capacitor connected between a power source and integrated circuit device, as taught by Sano (column 2, lines 32-35).

Art Unit: 2841

9.3. Claim 16 is rejected under 35U.S.C. 103(a) as being unpatentable over Titizian as applied to claims 1 above, and further in view of Hajimiri et al. (PGPub. #2003/0206389) hereinafter Hajimiri.

To apply prior art the Examiner consider "a layer" as "a strip" as applicant does.

As to claim 16: Titizian discloses in Fig. 9 the multilayered power supply line 900 according to claim 1,

Although, Titizian does not explicitly teaches the third metal strip has the same wiring width of the first metal strip and the second metal strip. Hajimiri, for example, discloses in his invention and in also in the "Background of the invention" section, at the time the invention was made, it was well know different shapes and relative sizes of the strips for capacitor structures, (Hajimiri, Fig.2-9).Further, it has been held "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) And furthermore in re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) held that limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Titizian to include in his invention the third metal strip has the same wiring width of the first metal strip and the second metal strip, motivated by its known suitability for its intended use. See MPEP §2144.07.

### ***Allowable Subject Matter***

10. Claims 5-7 and 18-20 are objected to as being dependent upon a rejected base claims 1, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

Art Unit: 2841

As to claim 5: The limitations "the source potential and the ground potential alternate in first metal strips which are disposed in generally planar layer consisting of a plurality of the first metal strip, wherein the source potential and the ground potential alternate in adjacent strips of the first metal strip and the third metal strip, and wherein the potential is similar in adjacent strips of the first metal strip and the second metal strip" are not disclosed or suggested by the prior art.


Claims 6, 7 and 18-20 depend on claim 1.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571)- 272-2800 ext. 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS

  
DEAN A. REICHARD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800 3/19/07